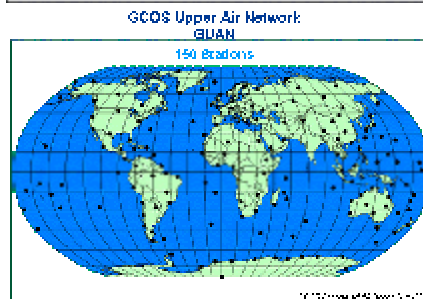
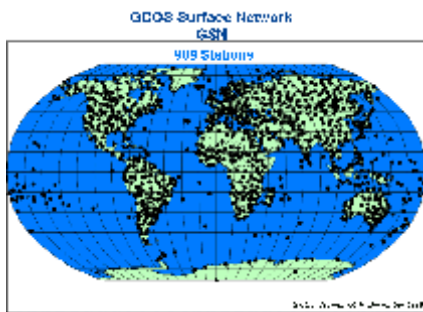


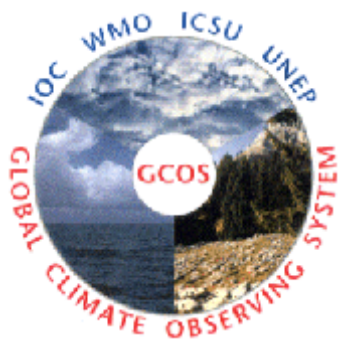


FY 2003 President's Request

Climate Change Research Initiative: Global Climate Observing System



The GCOS surface and upper-air networks will help meet a variety of weather and climate objectives.



NOAA's efforts with GCOS will help ensure that the observations needed to address climate-related issues are obtained and made available to all potential users.

What is requested?

NOAA requests an increase of \$4 million, as part of the \$18 million increase in the Climate Observations and Services line item, to work towards the goals of the Global Climate Observing System (GCOS). The increase is part of the Climate Change Research Initiative announced by the President in June. It addresses the Administration's commitment to study areas of scientific uncertainty in climate change and address priority areas where investments can make a difference. GCOS is an international program working to integrate and enhance the atmospheric, oceanic, and terrestrial observational systems needed to study climate. NOAA requests the increase to address an important component of the GCOS program: to expand the capability to monitor long-term atmospheric changes on global and regional scales in order to assess its contribution to climate change and environmental issues.

Why do we need it?

GCOS, sponsored by the World Meteorological Organization (WMO), International Oceanographic Commission, United Nations Environmental Programme, and International Council for Science, has 989 Surface Network (GSN) locations worldwide where observations are required for climate monitoring. These stations provide a baseline for global change and will further serve as calibration / validation sites for satellite measurements. The GSN enhances regional coverage of key climate parameters from field data and allows expansion of surface data to the global scale.

The GCOS Upper Air Network (GUAN) consists of 150 stations selected to produce a homogenous global distribution. The stations, which are a subset of the WMO World Weather Watch Global Observing System, are intended to meet both weather and climate objectives. The network provides global fields of key climate parameters (e.g., temperature, humidity, and winds) and is crucial to supporting both the monitoring of the climate system and the research needed to understand its variability and ultimately to make climate predictions. Fifteen additional sites have been identified for use as a standby network, network upgrades, or furthering monitoring in the Indian and African regions.

There are presently 20 global stations in the GCOS Global Atmosphere Watch (GAW). The main objective of GAW is to provide data and other information on the chemical composition and related physical characteristics of the atmosphere and their trends, required to improve understanding of the behaviour of the atmosphere and its interactions with the oceans and the biosphere.



Data will be collected from areas where it is needed to improve overall operational and modeling capabilities.



Some key climate variables are not well observed and some geographical regions need more coverage for accurate measurements.



For more information:

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While the national system has made a start in the design and operation of a climate reference network, the GCOS monitoring of reporting indicates that developing countries in particular have often been unable to maintain the operating schedules, or to transmit the information effectively. Approximately half the global network does not meet the observing and reporting protocols. Only about two-thirds of the stations are fully or partially compliant with the observing and reporting requirements. These inadequacies have led to large uncertainties in trends of atmospheric temperature and humidity.

The global network can presently measure global, long-lived, greenhouse gas levels, but is inadequate for determining sources and sinks at less than global scales. The network is also inadequate for climate attribution studies. Long-lived greenhouse gases are not measured adequately over continents. In addition, satellite measurements need global ground-truthing to help assess their accuracy.

What will we do?

NOAA will work with the US Agency for International Development and international partners to reestablish and support the benchmark upper-air network for collecting long-term data. In particular, stations will be located in data-sparse areas such as remote islands, Latin America, and Africa to ensure the supply of expendables, communication equipment, and training for in-country technical staff. International partners will match U.S. resources in this effort. NOAA will work with these partners to establish a system to maintain support, including assistance for the surface and free-air sampling programs.

What are the benefits?

The global climate atmospheric observing system will help NOAA's efforts to improve the quality of the global climate record, which will help provide more accurate descriptions of the nature and cause of climate change. The details of climate variations and change require a continual supply of consistent, high-quality observations. The present network is currently adequate to characterize global, long-lived, greenhouse gas levels, but is inadequate to determine sources and sinks at smaller scales. In addition, the network of field measurements is inadequate for climate attribution studies. Long-lived greenhouse gases are presently not measured adequately over continents. Furthermore, satellite measurements require ground-truthing, which GCOS is working to provide so as to ensure and improve accuracy.

By improving and reducing the uncertainty in the global climate record, better models and, hence, predictions, can be developed. NOAA's efforts with GCOS to improve and observe the atmospheric components of climate change will provide a critical clue in filling in the gaps of present uncertainties in climatology.

NOAA Budget

Climate Research
Climate Observations and Services
Climate Change Research Initiative

FY2003 Change
\$ millions

\$18